



**The University of Iowa  
Heartland Center for Occupational Health & Safety**

**Summary Annual Report  
July 1, 2010 - June 30, 2011**

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## Introduction

The Heartland Center for Occupational Health and Safety (Center), based at The University of Iowa (UI), has served DHHS Region VII (Iowa, Kansas, Missouri, and Nebraska) since 2000 as a center of excellence in interdisciplinary training, education and research. Since its inception, the Center has grown from three academic training programs to seven nationally recognized academic training programs as well as dynamic regional continuing education and outreach programs. The Center's work is supported by the National Institute for Occupational Safety and Health (NIOSH); the University of Iowa Hospitals and Clinics; and the Deere Foundation.

## Summary and Specific Improvements in Occupational Safety and Health Resulting from Center Activities

The overall goal of the Center is to provide first-rate graduate training, innovative continuing education and unique outreach services in occupational safety and health (OSH). The following accomplishments occurred during this reporting period.

**Trainees and Graduates:** Fifty-three student trainees participated in our interdisciplinary training programs, 15% of whom are US citizen/minority students. Eighteen trainees graduated during this reporting period. Center graduates are highly recruited for OSH positions in both public and private sectors – many of which are in Region VII. One graduate from this reporting period is pursuing a PhD degree at the UI. The high caliber of the Center is evidenced by the many national academic and research awards received by the trainees, for example: **Agricultural Safety and Health:** an MS trainee was elected to the Board of the Iowa Public Health Association (IPHA). This trainee also chaired the program committee for the IPHA state meeting this year; **Ergonomics:** A PhD trainee was awarded a Center pilot grant to support her PhD dissertation research. **Industrial Hygiene:** Four trainees received awards for their poster presentations at the 2011 AIH<sub>CE</sub> in Portland, OR including "Best of Conference" award. An IH trainee received a scholarship award from the Clyde M. Berry Memorial Scholarship Fund; two trainees received scholarships from the Iowa Governor's Safety & Health Council; and one trainee received a scholarship from the Iowa Occupational Safety and Health Advisory Council; **Occupational Epidemiology:** A MS trainee received the University's 2010 L.B. Sims Outstanding Master's Thesis Award, which is the University's top recognition for Master's students. This trainee's thesis, "Utility of Death Certificate Data in Predicting Cancer Incidence," was selected from a university-wide competition. This trainee has elected to continue as a PhD candidate in this Program; **Occupational Health Nursing:** All eight MSN trainees attended the AAOHN National Conference in Atlanta, GA. The trainees met with faculty and many alumni of the OHN Program at this event; **Occupational Injury Prevention:** Trainees were awarded two pilot grants and presented their work at three scientific meetings. One trainee received the Milford E. Barnes Award for excellence in her area of epidemiology; **Occupational Medicine Residency:** Graduates have a 97% pass rate (since 2000) on the American Board of Preventive Medicine (ABPM) examination in occupational medicine. One resident was in year two of receiving the Occupational Physicians Scholarship; another resident was awarded a scholarship from the Occupational Physicians Scholarship Fund. One resident received the J. Frederic Green MD Fellowship in Occupational Medicine Award. One resident was offered and completed a rotation at OSHA in Washington, D.C.

**Continuing Education (CE):** Our innovative offerings provided 1,318 practicing professionals with current OSH knowledge and skills through 34 interdisciplinary CE programs totaling 1686 person-days (a 21% increase in courses resulted in a 4.5% increase in person-days compared to 2009-2010). The NIOSH Spirometry Program Course Approval Committee approved our NIOSH-Approved Spirometry Refresher Training Course #103 through 08/31/15. Our first refresher course was held on 08/25/10. Ongoing partnerships with the Central States Occupational and Environmental Medical Association (CSOEMA) and the Iowa Occupational Safety and Health Council continue to allow us to reach large numbers of occupational medicine practitioners, safety professionals and workers. We also reach nurses and industrial hygiene practitioners thru the annual Occupational Health Symposium and Case Management conferences.

**Center-wide Outreach:** The Center influenced the practice of OSH through an array of direct outreach services and through a network of community hospital-based occupational health clinics (WORKSAFE IOWA Occupational Medicine Associate Network). Altogether we estimate our outreach efforts impacted over 12,000 employers and 400,000 workers. We continued to disseminate information promoting workplace safety and health through a monthly electronic newsletter – *Health & Safety Bulletin* and a monthly OSH alert – *OSH Heads-Up*. This year we have also created a web-based research to practice (r2p) bulletin providing examples of r2p initiated by Center faculty and staff.

**Research to Practice:** Research findings translated into practice and policy through partnerships and dissemination of information included: 1) the inaugural r2p bulletin focused on workplace violence issues. The focus of this initiative is violent crimes at convenience and retail stores and local law enforcement response. Researchers from the Occupational Injury Prevention (OIP) Program Area were instrumental in translating their research findings to practical strategies that the workers and store owners can implement making their work environment safer; 2) OIP faculty work directly with the Iowa Fatality

Assessment and Control Evaluation (FACE) program, which incorporates translation of fatality investigations to prevention priorities; 3) OIP faculty are also evaluating the impact of lighting and marking policies on preventing roadway crashes among farm equipment operators. Two OIP trainees have funded translational research projects – one is evaluating the effectiveness of a suicide prevention training program directly with Human Resources personnel at a large Midwestern University. The second involves a Threat Assessment Team which responds to actual cases of violent threats to students and staff on a university campus and 4) research on stress factors in law enforcement was translated to practice through a peer-reviewed publication for occupational health nurses by the faculty in the Occupational Health Nursing program area.

### **Major Accomplishments - Center-wide Activities**

**Administration** -Dr. Patrick O'Shaughnessy (Director) and Dr. Tom Cook (Deputy Director) provided Center leadership with weekly management team meetings and biannual meetings of the Internal Advisory Board (composed of program directors and student representatives from each program). Under the direction of Chair Steve Minshall, CSP, CIH, the 12-member External Advisory Board (EAB) held biannual meetings via teleconference. The EAB consists of practicing OSH professionals from across Region VII.

**Outreach** – Information on preventing occupational injuries and illnesses has been provided to workers, employers and practitioners through newsletters, consultations, and presentations. Examples include: *interdisciplinary consultations* - LPN and certified medical assistant scope of practice in the occupational health clinic setting (OM & OHN); lead exposure of law enforcement officers in indoor firing range (OM & IH); and PCB exposure following capacitor explosion (IH, OM & OHN). *Information dissemination to practitioners* - Medical Review Officer functions for Spanish-speaking workers; safe work in High Outside Temperatures (H.O.T.); and amendments to Federal DOT drug and alcohol testing of workers.

**Diversity Recruitment** - Our recruitment strategies have maintained the proportion of Center's minority students at 15% during 2010-2011 as well as over the past 8 years.

**Interdisciplinary Coordination** – Forty six ERC trainees (82% of all trainees) participated in the second annual Center Interdisciplinary Forum on 08/18/11. Five of the trainees utilized the distance-based Elluminate Live format. The forum included presentations on research projects by 4 trainees with discussion following each presentation; an interdisciplinary get-to-know-you ice breaker game; and trainee funding orientation. A group picture followed by lunch highlighted the event. Additionally, we maintained faculty collaboration across disciplines, departments and Colleges that is the basis of all Center programs, and we fostered trainee interactions across programs through courses, seminars, and other special events (i.e., the annual, student-run academic “quiz show” – Family Feud in spring 2011). Also, our interdisciplinary course, *175:230 Occupational Health*, required of all trainees, involved plant visits where trainees from across all core disciplines worked together in teams to evaluate industrial sites in eastern Iowa.

**Pilot/Small Projects Program** – The Center supported five projects with pilot grants, which are examining 1) investigation of particle bounce on human skin to increase the accuracy of a computer model of breathing aerosols, 2) analysis of a method for processing electromyography (EMG) data obtained while measuring repetitive muscular exertion, 3) use of a case-control study to determine bicycle fatalities and crashes in occupations requiring bicycles for transportation, 4) development of an analytical method for quantifying agrichemicals in biologic and environmental matrices and 5) implementing and evaluating a worker suicide prevention education and training program.

**Continuing Education** - The Center surpassed the 600-trainee annual requirement used to train OSH practitioners. Impact evaluation data from CE trainees indicate course information is implemented in practice (e.g. 100% of 17 CE trainees at the newly offered *NIOSH-approved Spirometry* refresher training use ATS/ERS testing standards and guidelines in their practice and that they improved their competence/ability to apply knowledge, skill and judgment as a result of this course; 100% of the 60 case managers at the *2010 Case Management: Care of Work-Related Injuries* course improved their competence/ability to apply knowledge, skill and judgment and 40% improved their work practice by actually doing something differently.

The *Occupational Health Symposium: Session I* improved competency related to ionizing radiation in the workplace, emergency response planning, indoor air quality, sampling for mold and establishing a noise control program for 26 practicing professionals (10 IH, 6 Safety, 4 OHNs, 1 MD, and 5 other trainees by profession). The *39<sup>th</sup> Annual Iowa Governor's Safety & Health Conference: Navigate Safety* provided up-to-date information to 287 practicing safety, industrial hygiene and OHNs. Topics ranged from ergonomics and body motion injuries to real life fall protection and process safety management – mechanical integrity.

## Major Accomplishments - Program Areas

**Agricultural Safety and Health (ASH)** – One of our PhD trainees has been consulting with an agricultural processing plant. This trainee also authored three peer-reviewed publications and presented at a regional scientific conference. After completing a PhD, another trainee graduate was hired by the State of Vermont, College of Agriculture, in the Extension Division. This graduate received the 2010 Outstanding Graduate Student award presented by the University of Iowa, College of Public Health, Department of Occupational and Environmental Health.

**Ergonomics (Ergo)** – In addition to the five trainees, two additional trainees were admitted (1 MS, 1 MPH), with matriculation in August, 2011. Ergonomics and human factors trainees and faculty published or submitted 9 manuscripts in the peer-reviewed literature and delivered several presentations during regional and national scientific meetings. With the influx of trainees and ongoing search for an additional faculty member, the ergonomics training programs is expected to experience continued growth.

**Industrial Hygiene (IH)** – Three industrial hygiene trainees are first authors on peer-reviewed papers published in the past year or in press. All IH trainees attended the 2011 AIH<sub>CE</sub> in Portland, OR with nine presenting posters and four of those winning awards.

**Occupational Epidemiology (OE)** – Two trainees received their PhD this year. One is working as the primary field investigator for the American Red Cross and the other was hired as an Assistant Professor at the University of Washington. Three trainees were integral team members of a large retrospective mortality and cancer incidence cohort study of 38,000 munitions workers. The newest PhD trainee spent the last few years concentrating on global HIV/AIDS with the Centers for Disease Control and Prevention. The newest MS trainee received a pilot grant to examine the deposition of silica in lung cancer biopsy samples based on occupations not thought to be at risk for silica-induced adverse health effects.

**Occupational Health Nursing (OHN)** - This program had eight trainees with two graduates. Both the MSN graduates are employed in DHHS Region VII. One OHN trainee submitted a manuscript to the AAOHN Journal. An OHN faculty member served on the National Academy of Science, Institute of Medicine, Respiratory Protection Curriculum committee.

**Occupational Injury Prevention (OIP)** – One of the OIP trainees graduated with a PhD and accepted an academic research position. Five trainees are on track with their dissertation projects. Two new trainees were successfully recruited. The OIP increased its diversity of trainees, with two trainees from underrepresented minority populations. A total of 16 papers were published during this period; six were co-authored by OIP fellows. Dr. Peek-Asa (Director of the OIP) received a service award from the University of Iowa College of Public Health and the President's Award from the Society of the Advancement of Violence and Injury Research

**Occupational Medicine Residency (OMR)** – The OMR program had 5 trainees in various stages of their training. One graduate obtained employment in DHHS Region VII.

**ERC Enrollment** – current program enrollment and number of graduates during the reporting period are presented below:

Program Area	Trainees	Graduates
Agricultural Safety & Health	4 (2-MS, 2-PhD)	0
Ergonomics	5 (3-MS, 2-PhD)	0
Industrial Hygiene	18 (11-MS, 7-PhD)	10 (7-MS, 3-PhD)
Occupational Epidemiology	7 (1-MS, 6-PhD)	2 (PhD)
Occupational Health Nursing	8 (MSN)	2 (MSN)
Occupational Injury Prevention	6 (PhD)	1 (PhD)
Occupational Medicine Residency	<u>5</u>	<u>3</u>
	<b>53</b>	<b>18</b>

**Administrative Report** – Thomas Peters, PhD, was named director of the Industrial Hygiene Program Area. Matthew Nonnenmann, PhD was hired as an assistant professor in the IH Program Area. Kerri Rupe, DNP was named Director of the Occupational Health Nursing Program Area. The Department of Occupational and Environmental Health (College of Public Health) and the Department of Mechanical and Industrial Engineering (College of Engineering) are each actively searching for new faculty with expertise in ergonomics and human factors. The new faculty, when appointed, will contribute and add breadth to the Ergonomics Training Program.

**Publications** - Over 50 papers addressing important topics in OSH were published and are in press in peer-reviewed journals. To access a complete list of publications click the following link:

<http://www.public-health.uiowa.edu/heartland/pubs-for-ERC.pdf>